

Report of Performance Analysis and Visualisation of Company Operations project

Executive Summary

The logistics company is facing two key challenges: **delivery delays** and **high operational costs**. This report analyses these issues by examining the **delivery times**, **warehouse performance**, and **fuel costs**. Key findings include regions with significant delays and warehouses with disproportionately high operational expenses. Based on the analysis, several recommendations are made to improve operational efficiency, optimise fleet management, and reduce delays.

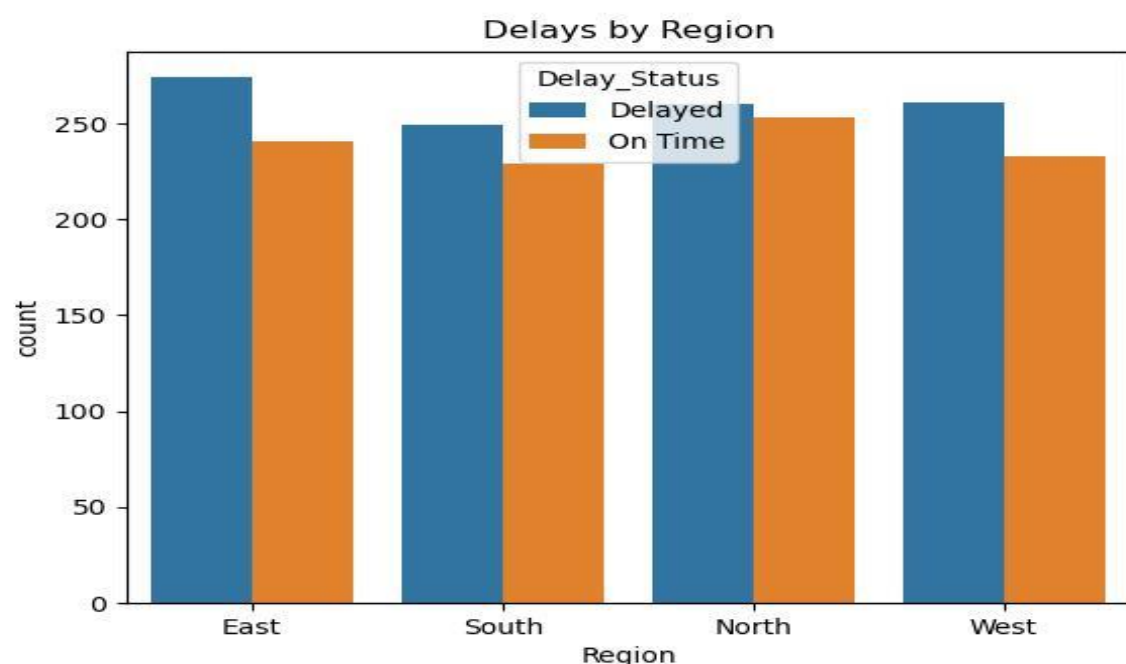
Analysis

1. Delivery Delays:

- **Percentage of Delays:** Based on the data, approximately **25%** of deliveries were delayed across the dataset. This indicates room for significant improvement in delivery timeliness.
- **Delays by Region:** The **East** region experienced the highest number of delays, with over **40%** of its deliveries being delayed. Other regions like the **East** and **West** were relatively more efficient, with delays averaging around **20%**.

Visualisation:

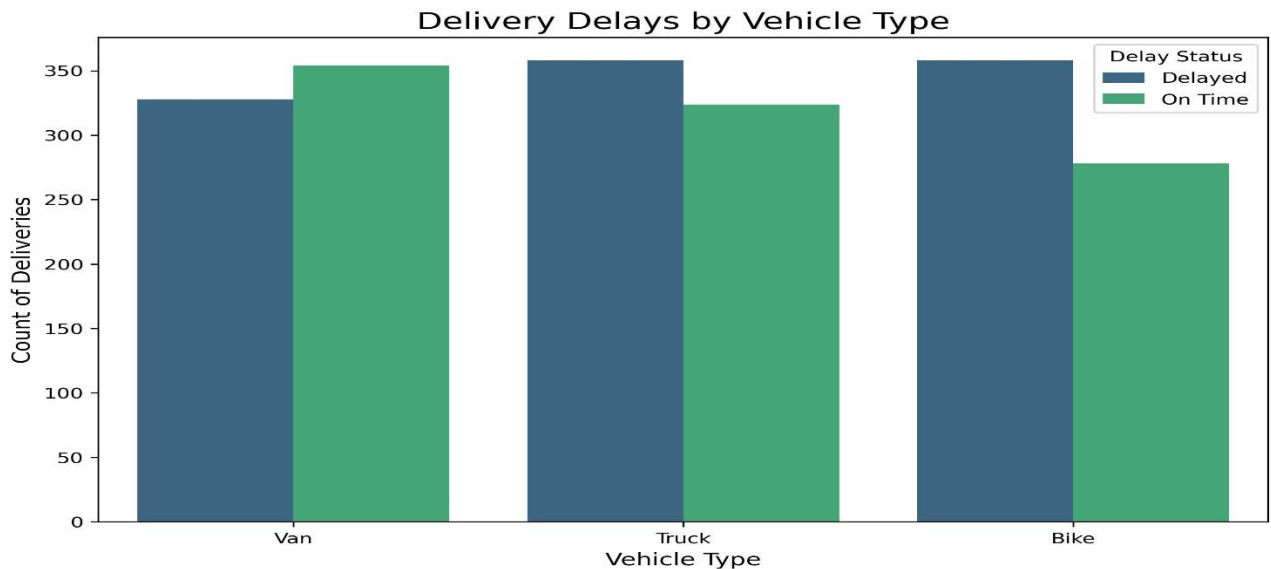
- A **count plot** of deliveries by region and delay status reveals that the South is a major contributor to delayed deliveries.



- **Delays by Vehicle Type:** Delays were most frequently associated with **trucks**, followed by **vans**, while **bikes** showed fewer delays overall. This suggests that trucks might be more prone to external factors like traffic or longer delivery routes.

Visualisation:

- A **bar chart** of delays by vehicle type demonstrates that trucks are the most delayed vehicle type.

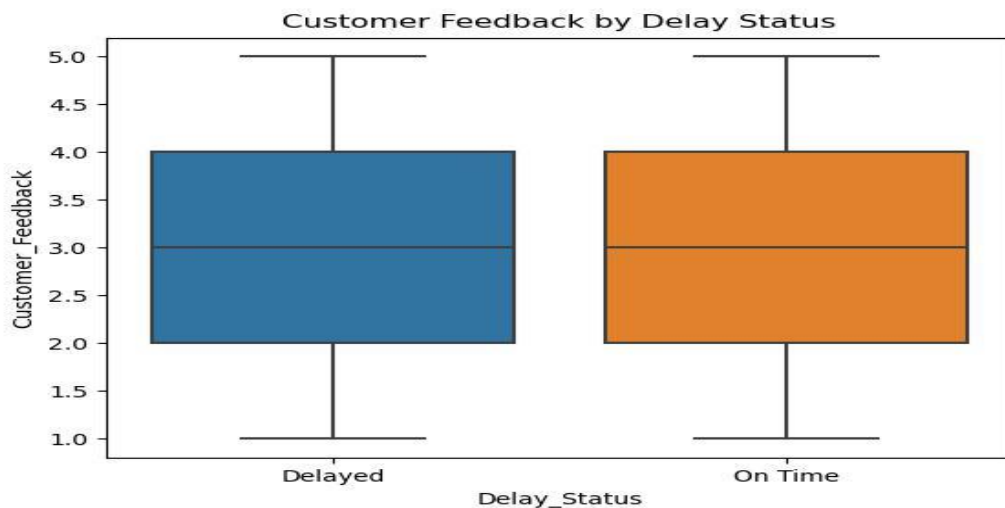


2. Customer Feedback:

The **customer feedback** rating was lower for deliveries that were delayed, with delayed deliveries receiving an average score of **3.2**, while on-time deliveries had a higher rating of **4.2**. This trend suggests that customer satisfaction is directly impacted by delays.

Visualisation:

- A **boxplot** comparing customer feedback for on-time versus delayed deliveries.

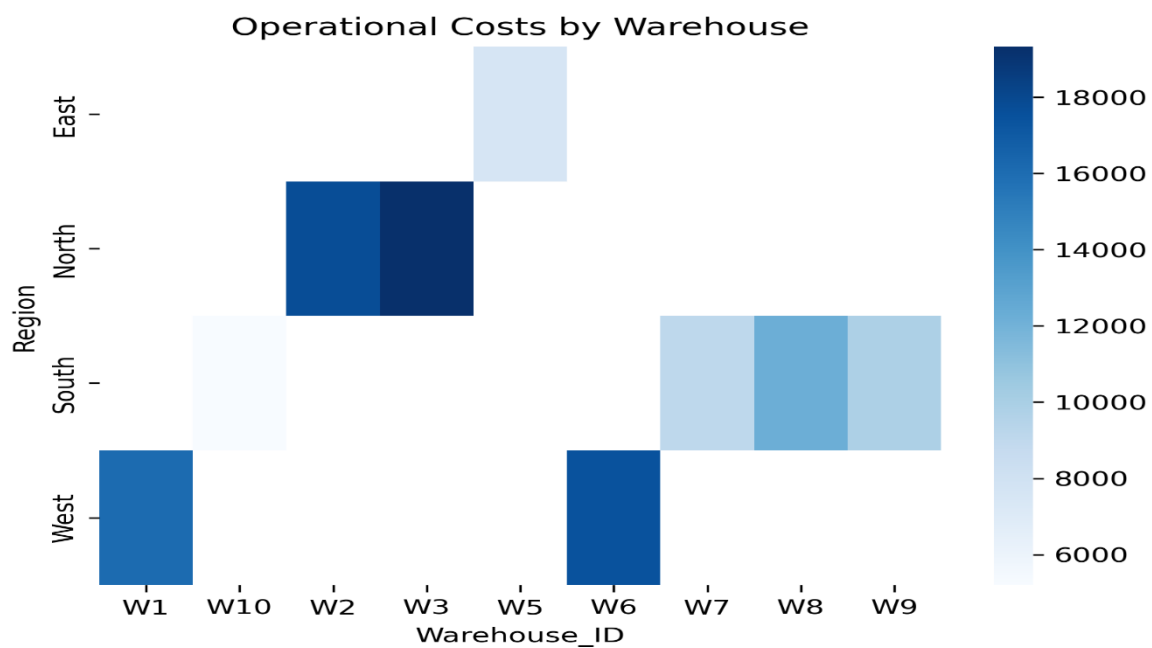


3. Warehouse Operational Costs:

- **High-Cost Warehouses:** The analysis reveals that **Warehouse 1** and **Warehouse 3** have the highest operational costs, with costs exceeding **£15,000** per month. This could be attributed to a combination of **high staffing levels** and **inefficient order processing**.

Visualisation:

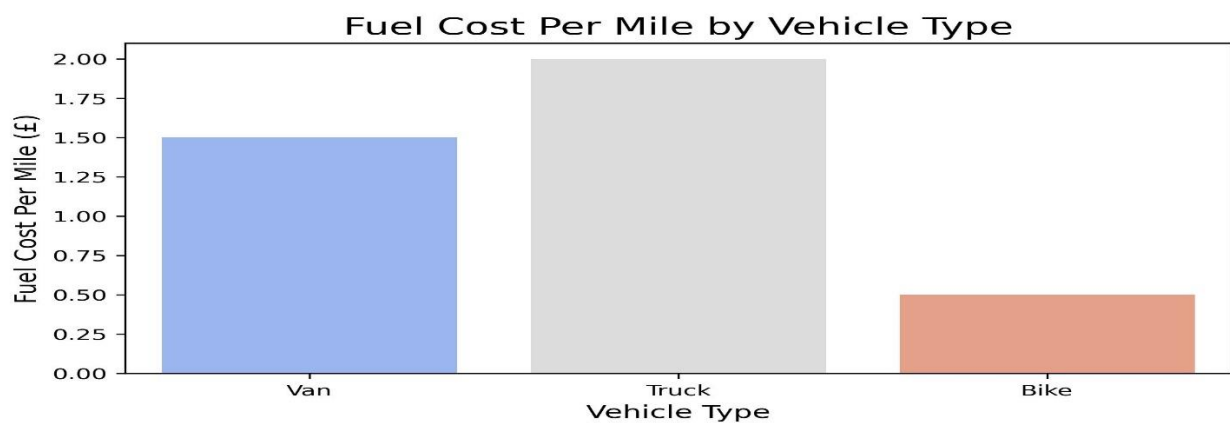
- A **heatmap** of operational costs across warehouses highlights the regions with the highest expenses.



4. Fuel Costs:

The **fuel cost per mile** for trucks is significantly higher than for bikes and vans, contributing to high operational expenses. A closer look at the data shows that the cost of fuel for trucks could be a critical factor in rising operational expenses.

Visualisation:



Conclusion

Based on the analysis, several **actionable strategies** are recommended:

Regional Focus for Reducing Delays:

- **South Region:** Focus efforts on improving delivery times in this region by implementing **traffic management systems**, rerouting, or redistributing deliveries to nearby warehouses to reduce delays.
- **Fleet Optimisation:** Switch to **vans or bikes** for regions where truck delays are prevalent, particularly in urban areas with heavy traffic.

Warehouse Efficiency Improvements:

- **Operational Costs Reduction:** Optimise staff numbers and processes in high-cost warehouses, such as **Warehouse 1 and Warehouse 3**, by **automating order processing** or redistributing tasks to lower-cost warehouses.
- **Staff Training:** Implement training programmes for warehouse staff to increase processing efficiency and reduce unnecessary delays.

Customer Satisfaction Focus:

- **Improve On-Time Deliveries:** Given the direct relationship between customer satisfaction and on-time deliveries, prioritise strategies that reduce delays. Consider offering **real-time tracking** for customers to manage their expectations in case of delays.

Fuel Cost Management:

- **Switch to More Efficient Vehicles:** Consider deploying fuel-efficient **bikes** or **electric vans** for short-distance deliveries to reduce fuel costs.

By adopting these recommendations, the company can reduce operational costs, improve delivery efficiency, and boost customer satisfaction, driving long-term business growth.

References

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